Claims

1. A purification device comprising:
a sample holder having
a sample chamber in communication through an opening with a
a column insert portion.

2. A purification device as defined in claim 1 wherein the column insert portion comprises a cylindrical receptacle extending from an opening of the sample chamber.

3. A purification device as defined in claim 2 wherein the sample holder portion defines a first diameter and first volume and the column insert portion defines a second diameter and second volume that is less than the diameter and volume of the sample holder portion and the opening forms a tapered transition between the sample holder and column insert portion.

4. A purification device as defined in claim 1 further comprising:
a column module configured to be secured in the column insert portion and in communication with the sample holder portion.

5. A purification device as defined in claim 4 wherein the column module further comprises chromatography medium having a special affinity for a given substance.

6. A purification device as defined in claim 1 wherein the column module further comprises permeable membranes configured to contain the medium but permit passage of a sample to through the medium.

7. A purification device as defined in claim 4 wherein a sample flow pathway is defined by the sample chamber, opening and column insert portion and column insert and

a flow regulator positioned along the flow pathway to regulate flow of a sample through the purification device so that purification of the sample is optimized.

8. A purification device as defined in claim 7 wherein the flow regulator comprises an ultrafiltration membrane.

9. A purification device as defined in claim 7 wherein the flow regulator comprises a micro-porous membrane.

10. A purification device as defined in claim 7 wherein the column module further comprises a removable top portion configured to fit in sealing engagement with the column module.

11. A purification device as defined in claim 10 wherein the column module is configured to receive medium selected by a user.

12. A purification device as defined in claim 10 wherein the column module is configured to receive one or more permeable membranes selected by a user.

13. A purification device comprising:

A well plate having a plurality of wells each having a sample chamber portion, a column insert portion ; and

a column module insertable into the column insert portion such that it is in fluid communication with the sample chamber portion.

14. A purification device as defined in claim 13 further comprising:
a collection tray configured to correspond to the well plate such that each well of the well plate aligns with a vessel of the collection tray so that samples can be collected.

15 A purification device as defined in claim 14 further comprising:
a barrier seal positioned between the well plate and the collection tray.

16. A purification device as defined in claim 15 wherein the barrier seal is formed from a flexible polymer.

17. A purification device as defined in claim 13 wherein the column module comprises a conical sleeve.

18. A purification device as defined in claim 17 wherein the column module further comprises a bottom sinter and a top sinter and particulate medium contained therebetween.

19. A method of separating a substance from a sample comprising

providing a purification device configured to contain a medium having a special affinity for the given substance,

placing a sample containing at least some amount of the given substance into the purification device,

orienting the purification device so that the sample is forced through the medium and the flow regulator to separate the given substance at flow rate conducive to an intended separation performance.

20. A method as defined in claim 19 wherein the purification device orients the sample above the medium and gravity forces the sample through the medium to separate the protein.

22. A method as defined in claim 19 wherein the purification device loaded with medium and a sample is loaded into a centrifuge such that the sample will be forced through the medium during centrifuge operation.

23. A method as defined in claim 19 further comprising the step of removing the medium with the separated substance from the purification device for further processing.

24. A method as defined in claim 19 wherein the substance to be separated is a protein.

25. A method as defined in claim 19 wherein the purification device comprises a fixture to hold a plurality of samples and mediums to conduct a plurality of separations simultaneously.

26. A method of separating a substance as defined in claim 25 further comprising arranging the fixture over an array of corresponding collection vessels so that samples separated from each purification device travel into a collection vessel.

27. A method of separating a substance as defined in claim 19 further comprising controlling the flow rate of the sample through the medium wit a flow restrictor to optimise binding of the given substance to the medium.

28. A method of separating a given substance from a sample comprising providing a purification device configured to contain a medium having a special affinity for the given substance,

providing a purification device having a customizable column module capsule,

supplying a user definable medium to be placed in the column module,

placing a sample containing at least some amount of the given substance into the purification device,

orienting the purification device so that the sample is forced through the medium to separate the given substance.

29. A method of separating a substance from a sample comprising:

providing a purification device having a sample holder portion and a column insert portion;

providing at least one column module having an affinity for a substance;

selecting a column module having an affinity for the substance desired to be separated from the sample;

placing the column module into the column insert portion of the purification device;

placing a sample containing some amount of the desired substance into the sample holder portion of the purification device;

orienting the purification device to force the sample through the column module to separate the desired substance.

31. A purification device kit comprising:

at least one sample holder having

a sample chamber in communication through an opening with a

a column insert portion.

at least one column module insertable into the column insert;

a binding buffer,

an elution buffer, and

a neutralization buffer.

32. A purification device kit as defined in claim 31 wherein a plurality of column modules are provided and each column module has a special affinity for a unique substance.

33. A purification device kit as defined in claim 32 wherein the column modules have affinities for different proteins.

33. A purification device kit as defined in claim 31 wherein a user definable column module is provided having a removable top and user definable mediums are provided for use with the column modules.

34. A purification device kit as defined in claim 31 further comprising:
a column module insertion and removal tool.